

item	Model	MW - X33	MW - X43
1.5 Years Warranty_Linear Guide Way		●	●
2.Spindle Air Curtain		●	●
3.Air Blast Through Spindle		●	●
4.Table side air blast		●	●
5.Centralized Automatic Lubrication System		●	●
6.Screw type chip conveyor		●	●
7.Tool package		●	●
8.Without Mist coolant system		●	●
9.Foundation bolt		●	●
10.Absolute pulse coder		●	●
11.Spindle Oil Cooler		●	●
12.Auto Power Off		●	●
13.Operation Finish Lamp		●	●
14.Foot Switch For Spindle Clamp/Unclamp		●	●
15.Remote Manual Pulse Generator		●	●
16.RS 232 Interface		●	●
17.Habor Convection Heat Exchanger In Control Box(For MITSUBISHI,FANUC,SYNTEC)		●	●
18.Fluorescent		●	●
19.Manual x1		●	●
20.6000RPM Gear Head		●	●
21.Full-enclosed splash guard		●	●
22.Fluorescent x2/4/6		★	★
23.Link type chip conveyor 0.19 KW(Without Coolant Tank) & portable chip bucket(1EA)		●	●
24.X / Y / Z -axis linear scale system_HEIDENHAIN		★	★
25.Manual x2/3		★	★
26.Hartford Manual x1/2/3		★	★
27.Hydraulic Hose Coolant gun		★	★
28.Air Gun		★	★
29.Oil Fluid Separator		★	★
30.Hoist Seat		★	★
31.Maintenance safety guard(Including maintenance ladder)		●	●
32.X/Y -axis ball screw support device		★	★
33.Pedal Ladder		★	★
34.Hybrid Spindle 10000RPM		★	★
35.ARM Type ATC		★	★
36.Coolant through spindle_Prepare		★	★
37.Coolant through spindle		★	★
38.TOUCH PROBE		★	★
39.Imitative Mold Cutting System		★	★
40.Closed Loop Linear Scale Positioning System		★	★
41.DNC Software		★	★

Electrical features Standard equipment & optional features

Hartrol / standard equipment

- Manual workpiece alignment
- Tool magazine graphics and data display
- Pop-up computer
- Supporting processing parameters
- Lettering processing function
- Tool correction screen & fast tool change function(only suitable for Fanuc)
- Machine utilization rate analysis (only suitable for Fanuc)
- Internal and external thread cutting (only suitable for Fanuc)
- Tool magazine data display-Tool style graphical data display (only suitable for Fanuc)
- Tool life monitoring(only suitable for Fanuc)

Electrical function / Optional features

- Power-off gravity axis lift function
- Coordinate display hand input
- Tool magazine HMI
- Rigid tapping tool retraction
- Spindle thermal displacement compensation

Hartnet / Optional features

- Whole plant utilization rate management system
- Processing countdown management
- Whole plant file transfer system
- Output management

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CAT.No.: 20230126-E03

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Intelligent Double Column Machining Center

Software machine

MW & MCW Series

- Z-axis balance system
- Machine-wide servo control system
- W-axis positioning with automatic brake system

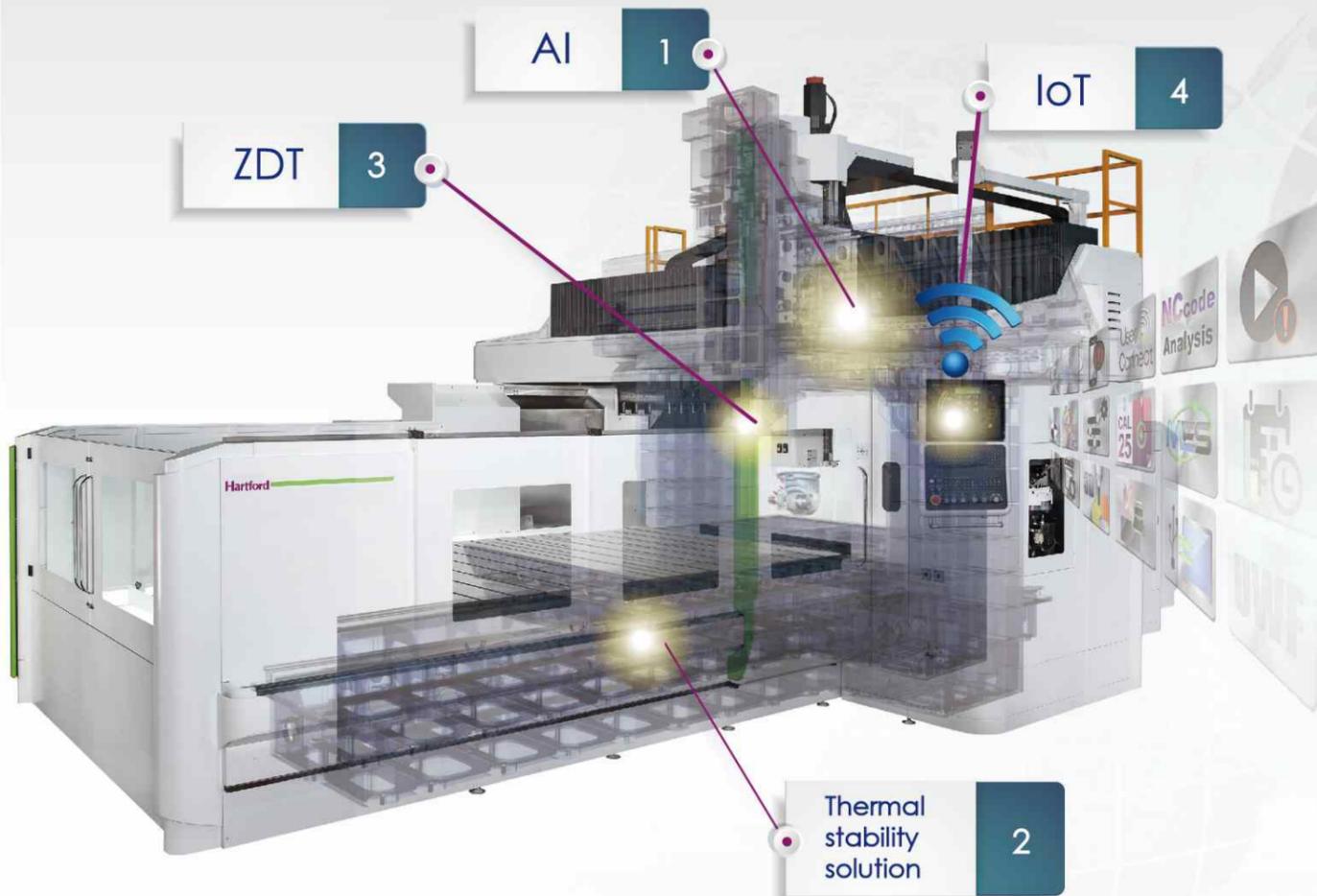


▲ VW-X430 model is shown

Imagine what future machines ought to be outlined.

Comprehensive machining programs to meet the diverse machining needs

Hartford
 redefine the future



IoT 1

- + Remote Warm-up & Turn-on
- + Hartrol Plus Sync & Update
- + User Connect

Thermal stability solution 2

- + Spindle Thermal Compensation
- + Casting Thermal Compensation
- + Thermal Symmetry / Thermal Balancing

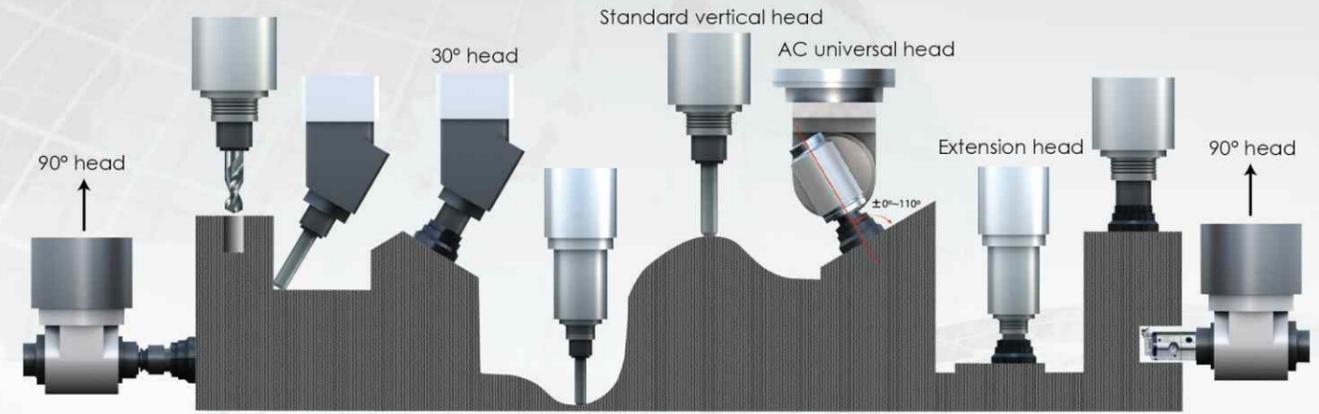
ZDT 3

- + Diagnosis Report on Spindle Operation
- + Alarm Report System

AI 4

- + Facial Recognition System
- + AI Efficient Lubrication Management
- + Smart Efficient Chip Collection

For versatile machining applications, it enables automation and high efficiency machining in the production line. AHC & VW Series have the ATC and are provided with several heads available for you to select. After one-time installation, it meets your various machining needs



Robust Cutting Strength Elevates On-site Productivity

MW series provides high rigidity, high cutting accuracy, ensuring optimum performance and surface cleanliness per mold products.



Railways



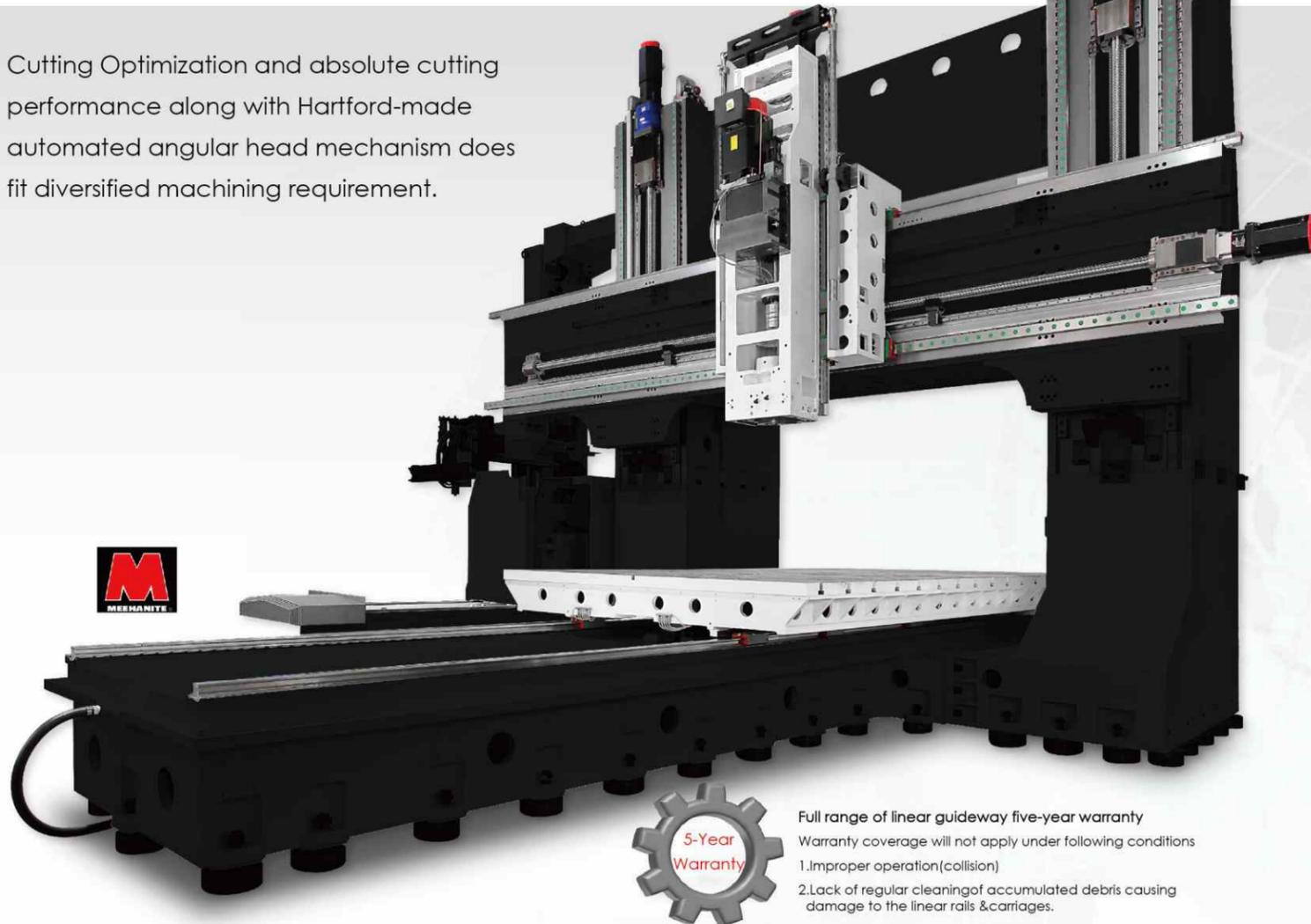
Die and Mold for Automobile Metal Sheets



Saddle Seat

MW Series Meets Varied Machining Requirement

Cutting Optimization and absolute cutting performance along with Hartford-made automated angular head mechanism does fit diversified machining requirement.



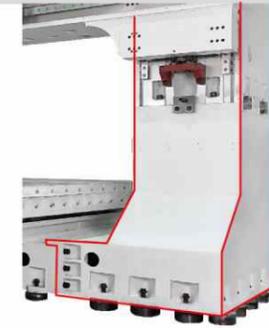
Full range of linear guideway five-year warranty
Warranty coverage will not apply under following conditions
1.Improper operation(collision)
2.Lack of regular cleaningof accumulated debris causing damage to the linear rails &carriages.

Unique Machine Structure Design



W-axis features twin ball screws and twin servo motors.

- Positioning accuracy performed 0.03 mm thanks to W-axis twin servo motors and direct-drive twin ball screws.
- W-axis feature is allowed for random positioning without restriction of machining area.



Firm columns deliver powerful cutting strength effectively.

- Width extension of column bases.
- Cutting vibration is effectively reduced.



Z-axis nitrogen accumulator weight system

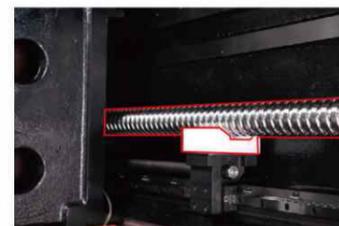
- Reduce operating noise of hydraulic tank.
- Reduce hydraulic tank oil temperature by 50%
- Effective energy-saving more than 20%

Screw support mechanism maintains excellent positioning accuracy

- In time of the transmission of the X and Y axes, ensure that power is maintained.
- Improve screw dead weight sagging; enhance the positioning accuracy and life of screw.



X-axis screw support mechanism



Y-axis screw support mechanism

Diversified strong spindle meets your processing needs



▲ Hartford made i-Tech hybrid type 10,000 rpm spindle(optional feature)

◀ Hartford made gear type 8,000 rpm Two-stage spindle (optional feature)

Hartford made gear type 8,000 rpm Two-stage spindle (optional feature)

- To follow the process attribute, pair up with high or low gear.
- Spindle-mounted structure design.

Hartford made i-Tech hybrid type 10,000 rpm spindle(optional feature)

- Motor and spindle dual cooling circulation design.
- Cooling cycle design
- Built-in motor-maximum 35kw, 600N·m

Z-axis four linear guideways three binding structure patented technology

The patented HSA four linear guideways three binding structure technology, two-way support provides high rigidity while cutting, bringing you excellent performance.

Patent No.1264343 machining center Z-axis head Z-axis four linear guideways.



X-axis three linear guideways design MW-X43

The X-axis three linear guideways design can be used to resist process rotation torsion and enhance rigidity by more than 50%. Moreover, the maximum load of a workbench can be 30,000kg, thus allowing you to meet your processing needs and help you each your accuracy and quality requirements.
(HSA-X20/X23/X27 are two linear guideways.)



MW three-axis direct-connected drive advantage

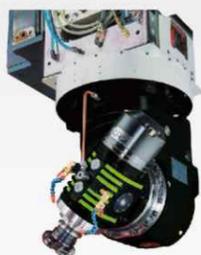
HSA series X-axis and Y-axis pair up with the planetary reducer, effectively enhancing the overall axial drive torque of the machine.

The comprehensive head series

Hartford has a comprehensive series of heads, including the auto universal head, auto 90° head, auto extension head, and auto holding head with a 90° head, which meet your versatile machining needs.

MW Series operate with the automatic head

Full auto milling head (auto holding head)



Automatic universal head(2.5°/1°)	Axis	A/C axis division angle configuration table			
A/C axis automatic rotation angle Maximum speed:4,000rpm Maximum power :26 kw The maximum torque to withstand : 930N-m Optional configuration of maximum pressure 70 BAR CTS	C-axis	1°	2.5°	2.5°	1°
	A-axis	1°	2.5°	1°	2.5°
	Remark	ST. standard feature	OPT. customized specifications		



Automatic 90° head (2.5° / 1°)
Maximum speed: 4,000 rpm / 2,500 rpm (opt.)
Maximum power: 26 kW
The maximum torque to withstand: 930 N-m
Optional configuration of maximum pressure 70 BAR CTS
Minimum optional configuration C-axis positioning indexing: 1 degree



Automatically extension head (350 / 500 mm)
Maximum speed: 4,000 rpm
Maximum power: 25 kW
The maximum torque to withstand: 750 N-m
Optional configuration of maximum pressure 70 BAR CTS
Automatic tool change function



Automatic clamp/unclamp+ the manual 90° head
Maximum speed: 2,000 rpm
Maximum power: 18.5 kW
The maximum torque to withstand: 650 N-m
External guide pins enhance the positioning accuracy of the exchange head, with automatic grab head function and manual rotating angle function.

Angular head exclusive technology

Patented technology

Patented technology



Clutch-type vertical skew angular axis head. The clutch lock of the horizontal axis(CHE)
During clutch, the electromagnetic brake will activate on both the rotating and linkage shaft. The slanting swing is generated by gravity. Reduce the amount of slanting swing while in clutch to avoid tooth jamming.



Angular head C-axis 1 degree positioning mechanism (TWC)
Angular head C-axis 1-degree indexing positioning function. Because the whole transmission system is a fully closed loop, it can still better eliminate the origin of mechanical backlash.

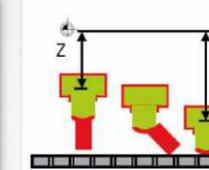


Angular head center coolant mechanism (UAC)
All automatic heads are optional with CTS function, can give customers maximum tool life and processing performance.

Intelligent technology



Minimum optional configuration A/C-axis positioning indexing : 1 degree
In AC travel, arbitrary integer angular inclined surface processing needs.(Optional accessory)



Auto angular head travel intelligent switching
Solves the problems of switching between travel and protected areas so that the travel limit (Y-axis & Z-axis) is automatically adjusted according to the universal head angular.(Standard accessory)



AC universal head rotation center + Tool tip automatic error measurement function
Raises processing accuracy, reduces manual measurement error, and shortens the measurement time. In time of measured comprising a heat deflection of the angle head, so it is possible to improve accuracy errors. (Optional accessory)

Adhere to quality and meticulous detail

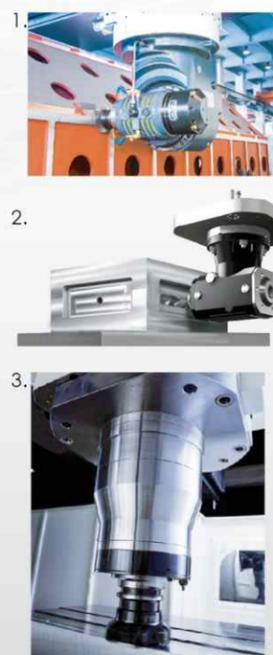
Hartford adheres to each gradation, grasps every possibility, and is devoted to adhering to quality and meticulous detail.

By demanding quality precision within each process, we remain dedicated to producing the best.

The machining methods of the full auto head

Machining methods	1.Composite angular milling	2. 90° side milling	3.Extension milling
Product types	AC universal head	90° side milling head	350/500mm extension head
Model number	HF-AU360H	HF-AU90L/H	HF-AE35/50L
Max. speed (rpm)	4,000	4,000	4,000
Tool type	BT50	BT50	BT50
Automatic indexing	5° / 2.5° / 1°	5° / 2.5° / 1°	—
Auto head	Auto	Auto	Auto
Automatic tool changeover	Auto	Auto	Auto
Rotary angle	C ± 180° A ± 110°	±180°	—

Note: Applied to the auto 90° head



• Adjust teeth clearance

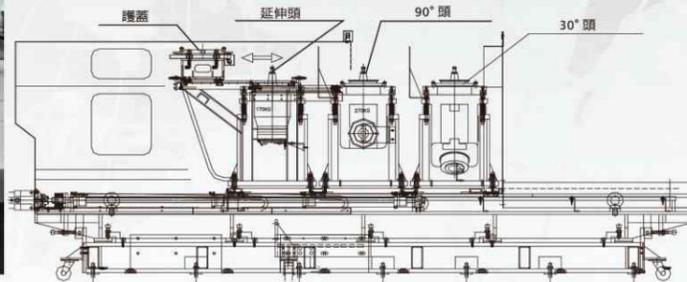
• End surface flatness correction

• Check gear

Full automatic head changer

The very first step for fully intelligent machining.

AHC and VW Series can operate with the automatic head changer and horizontal or vertical tool changer system to offer efficient and versatile machining.



- Can operate with the auto universal head/auto 90° head/extension head.
- The full automatic head changer is provided with the protective cover and independent head magazine.
- The hydraulic cylinder is used for fast head changeover.
- Each magazine is provided with an independent moving door that is opened only during the head changeover to prevent debris from contaminating heads.
- Additional head magazines are also available. If you need them, contact your sales representative.

VW Series Chain-type Tool Magazine

32 tools (standard) / 40 tools (optional)
 / 62 tools (standard)

- Suitable for tool changeover for vertical / horizontal millers
- BT50/CAT50 tool grip
- It is easy to load and unload a tool by stepping down the foot switch
- The automatic door of the tool magazine prevents the debris from contaminating tools
- During the tool changeover, the automatic door is controlled by the program



What is Hartrol Premium?

Hartrol premium is a brand new intelligent controller Hartrol , Hartnet and Hartford electrical function together which developed and made by Hartford.

HMI and operation is user friendly, it can achieve :

1. Internet connection, collect and analyze data, monitoring by portable device
2. Intelligent control: Auto revise human error and operating basis
3. Real time update new APPs

The difference between Hartrol plus and others

Function	Hartrol Premium 	Others
Screen Size	19" Multi-touch Panel	10.4" (OPT:15")
Look Ahead Block	2700(G5P20000)	400(1000 Max.)
Hard Drive	32GB SSD	NO
Smoothing Interpolation	SSS 4G	Option
Industry 4.0	Hartford UserConnect	NO



The Intelligent Controller You Should Have

With three major solutions, Hartrol Premium takes you machining to the next level.

Highly optimized and intelligent controls bring even more capabilities and productivity to your metal cutting processes.

With ease use, advanced automation, and smart data collection, Hartrol plus is essential tool for enhancing performance on your production floor.

Hartrol Premium

- Intelligent Support**
 - Cost down to 20%
 - Multi Touch Screen
 - CCD remote management
 - E-book
 - Remote Management
 - Cutting Condition Calculator
 - Stand-by Mode
- Intelligent Functions**
 - Productivity increased 23%
 - HartCAM
 - AFC= Automatic Feedrate Control.
 - SSS-4G
 - Machining Time Countdown for Single Block
 - Optimized Machining Program
 - Automatic measurement
- Intelligent Design**
 - Efficiency increased 20%
 - MES(Manufacturing Execution System)
 - Machine Utilization Management
 - Operator Performance Management
 - 24 Hours a Day Management
 - Remote Management
 - Hartford Userconnect

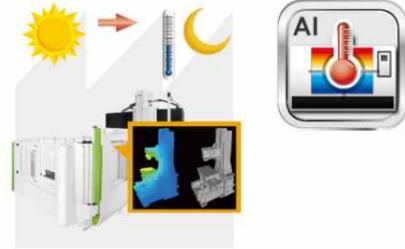
Hartford UserConnect

- Alert Notification
- Remote Diagnoses
- Remote Value Enhancement
- Remote Monitoring & Management

What Hartford APP can do for you?

AI Environment Thermal Displacement Compensation(opt.)

Vertical machining center : **0.03mm**
Thermal displacement problem is improved up to **60%**
It can achieve good accuracy as in constant temperature room.



AI Efficient Lubrication Management (opt.)

50% lubrication saved.

- Auto-adjustment oil supply base on machining condition.
- 50% oil consumption saved



AI Facial recognition system (opt.)

Face ID log-in authority
Recognition time: **2 seconds**
Recognition accuracy: **100%**



Set & Inspect(opt.)

Graphical user interfaces for part setting, inspection, tool setting

- Ease of use
- Increasing usability
- Eliminating manual set-up tasks
- Increasing efficiency



Hartford ZDT

Eliminate machine down time and increase efficiency. ZDT —

- Ease of use
- Check parts status clearly
- Eliminating unexpected down time
- Instand notification to your machine and your protable device



Spindle Vibration Intelligent Monitoring System (B-Safe) is ensuring spindle stability at times(opt.)

Highlights

- APP Vibration function is handy to set up manually.
- Alert status on crash protection.
- Responsive graphic is available for diagnosis by user, and analytic information is just-in-time served.

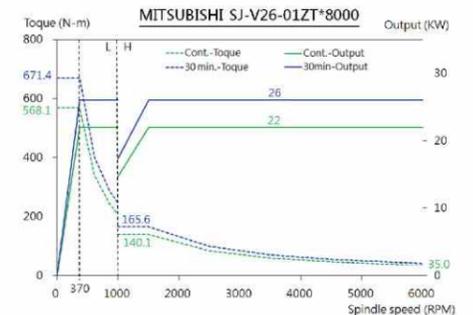
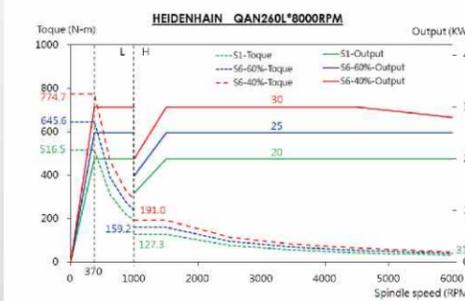
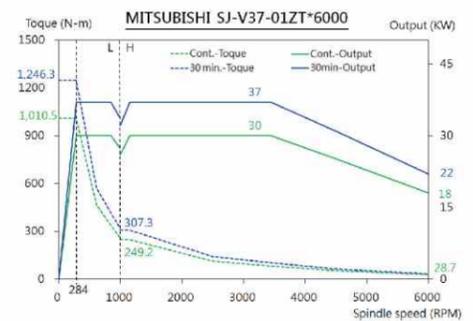
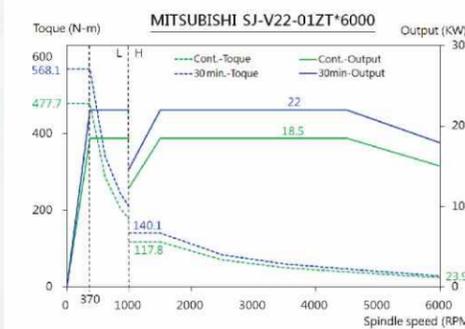
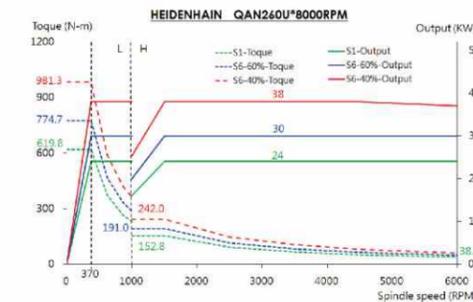
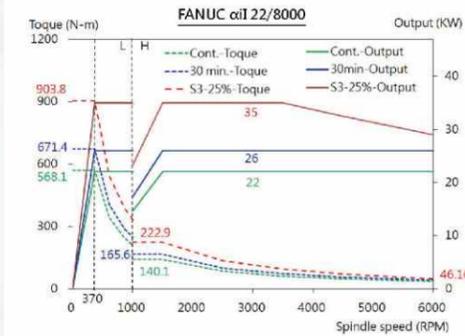
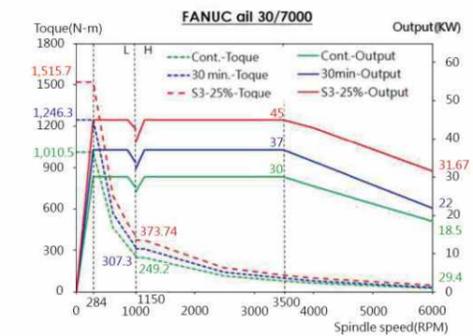
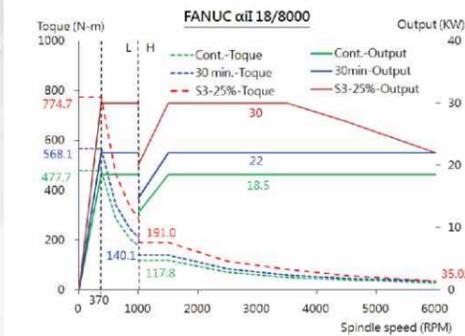


A variety of Hartford made spindles have Quality assurance

Torque curve diagram

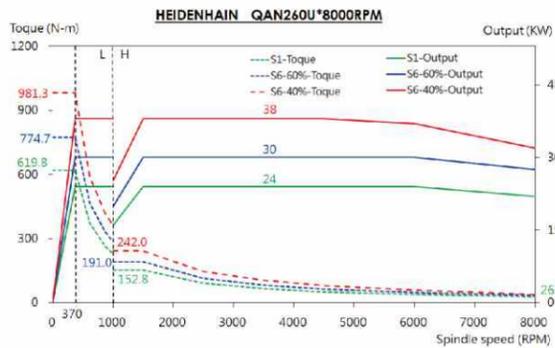
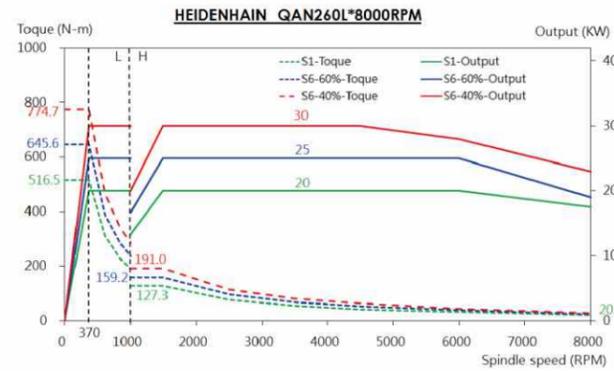
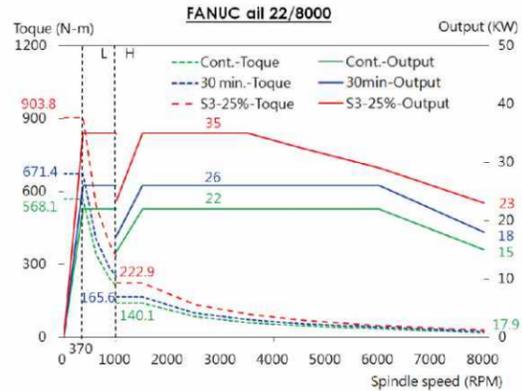
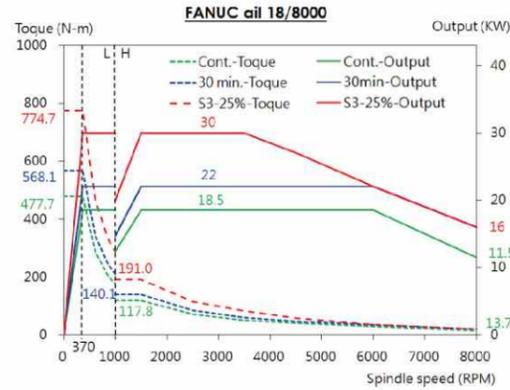
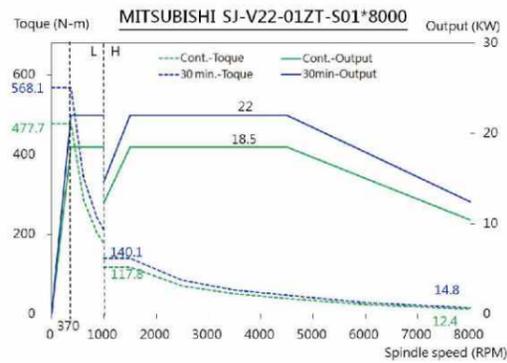
- 6,000 rpm gear type spindle
- 8,000rpm gear type spindle(optional configuration)
- Hybrid 10,000rpm spindle (optional configuration is applicab to EA/EAY)

Gear type 6,000RPM

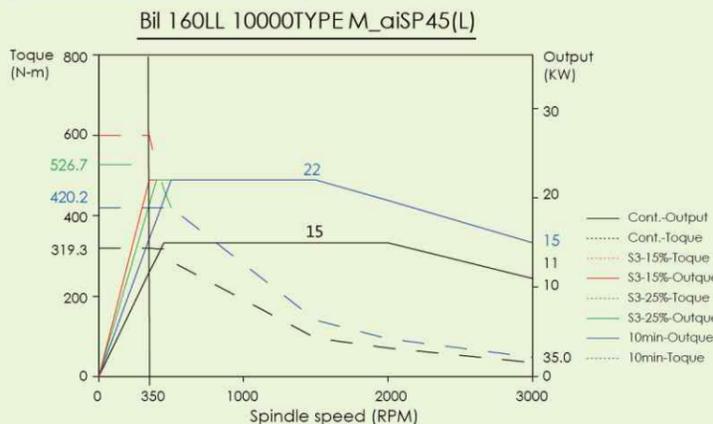


QC cutting ability test present the beat quality of Hartford

Gear type 6,000RPM

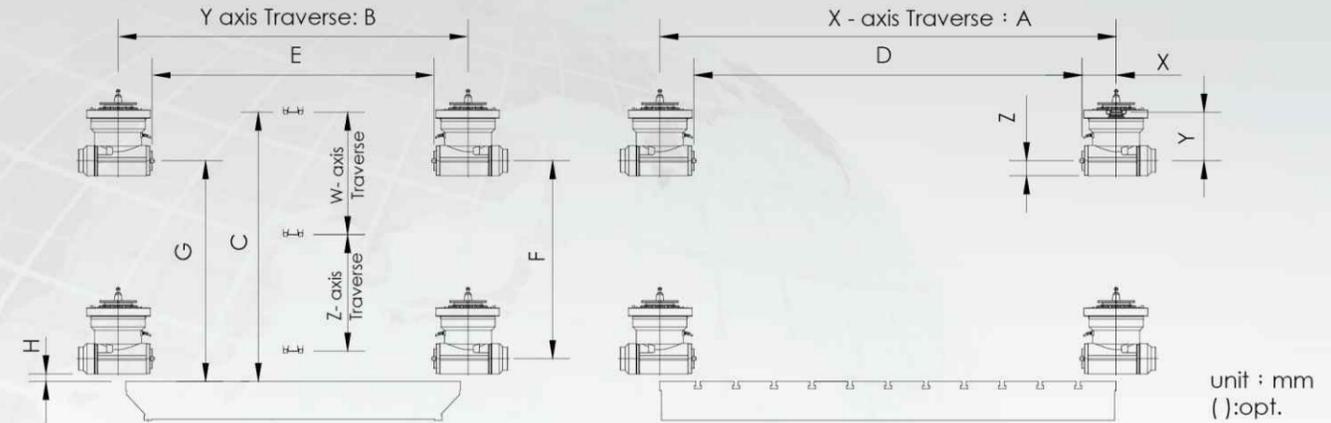


Hybrid 10,000RPM(opt.)



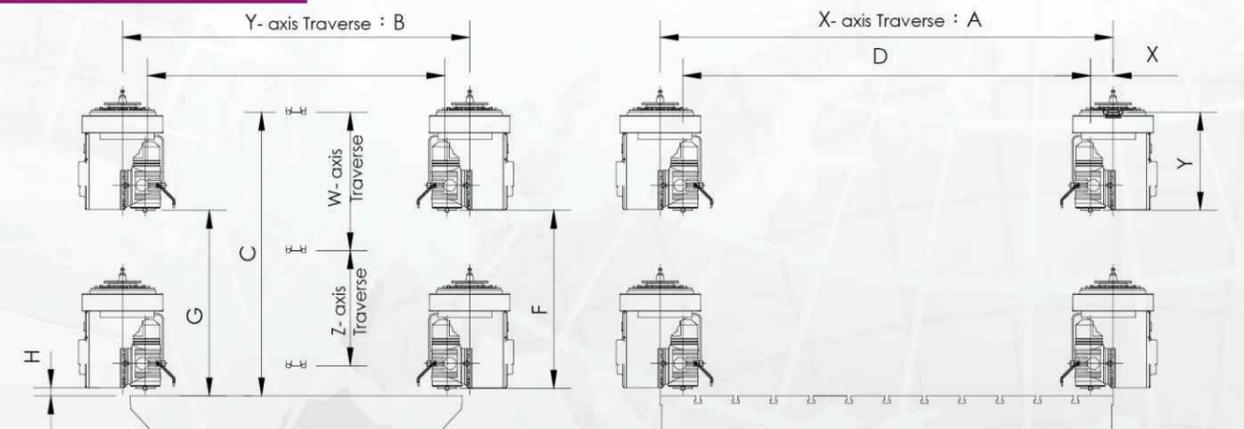
The new Y-axis is designed to bring a broader range of processing

Extensive 90 degree head_HF-AR90



MODEL	Z - TRAVEL	W - TRAVEL	column to column	A	B	C	D	E	F	G	H	X/Y/Z
							A-(X*2)	(B-X*2)	C-(Y+Z+H)	C-Y		
MW-433	1000	1200		4000		2400	3552		1930	2080	50	X : 224 Y : 320 Z : 100
MW-533	1000	1500	2500	5000	3300	2700	4552	2852	2230	2380		
MW-633	1200	1500		6000		2900	5552		2430	2580		
MW-543	1000	1200		5000		2360	4552		1890	2040		
MW-643	1000	1500	3500	6000	4300	2660	5552	3852	2190	2340		
MW-743	1200	1500		7000		2860	6552		2390	2540		
MW-843	1200	1800		8000		3160	7552		2690	2840		

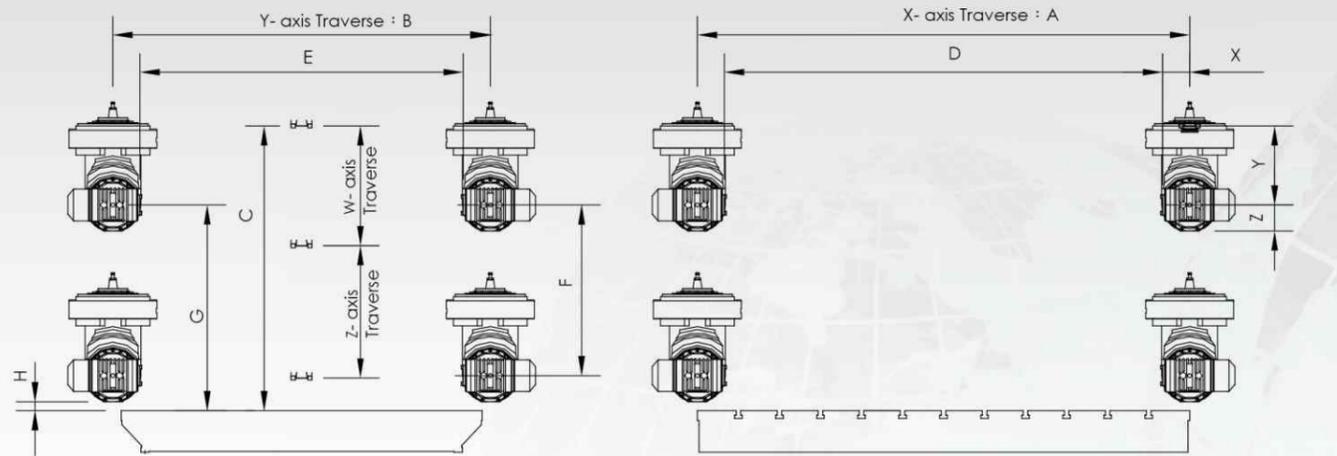
Automatic universal head_HF-AU360_V



MODEL	Z - TRAVEL	W - TRAVEL	column to column	A	B	C	D	E	F	G	H	X/Y
							A-(X*2)	(B-X*2)	C-(Y+Z+H)	C-Y		
MW-433	1000	1200		4000		2400	3700		1700	1750	50	X : 150 Y : 650
MW-533	1000	1500	2500	5000	3300	2700	4700	3000	2000	2020		
MW-633	1200	1800		6000		3200	5700		2200	2250		
MW-543	1000	1200		5000		2360	4700		1660	1710		
MW-643	1000	1500	3500	6000	4300	2660	5700	4000	1960	2010		
MW-743	1200	1500		7000		2860	6700		2160	2210		
MW-843	1200	1800		8000		3160	7700		2460	2510		

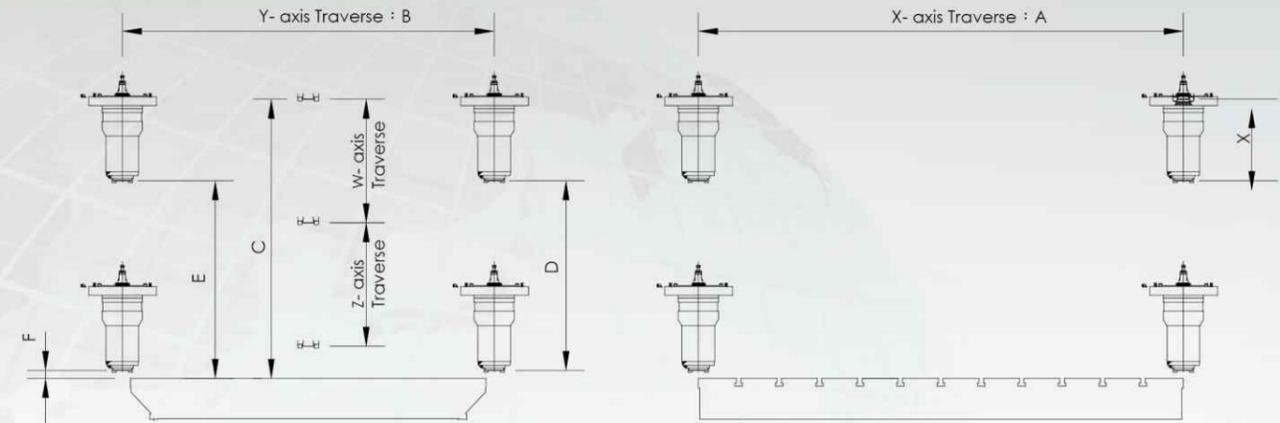
The new Y-axis is designed to bring a broader range of processing

Automatic universal head_HF-AU360_H



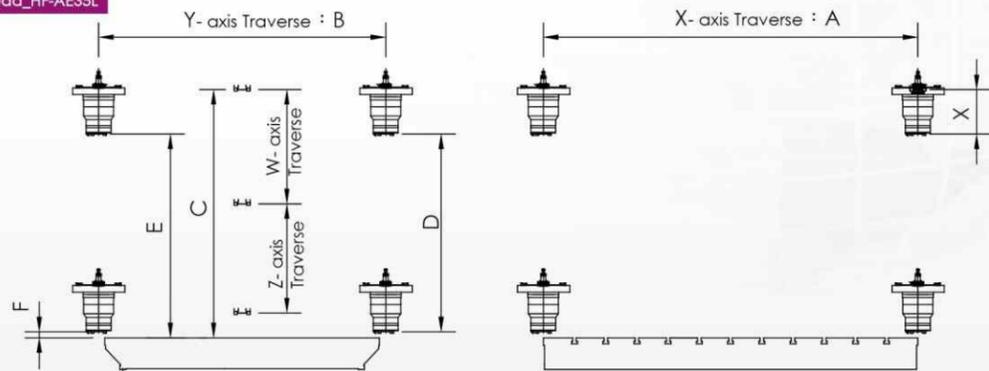
MODEL	Z-TRAVEL	W-TRAVEL	column to column	A	B	C	D	E	F	G	H	X/Y/Z
							A-(X*2)	(B-X*2)	C-(Y+Z+H)	C-Y		
MW-433	1000	1200	2500	4000	3300	2400	3670	2970	1705	1915	50	X : 165 Y : 485 Z : 160
MW-533	1000	1500		2700		4670	2215					
MW-633	1200	1500		2900		5670	2415					
MW-543	1000	1200	3500	5000	4300	2360	4670	3970	1665	1875	50	X : 165 Y : 485 Z : 160
MW-643	1000	1500		2660		5670	2175					
MW-743	1200	1500		2860		6670	2375					
MW-843	1200	1800		3160		7670	2675					

Automatically extension head_HF-AE50L



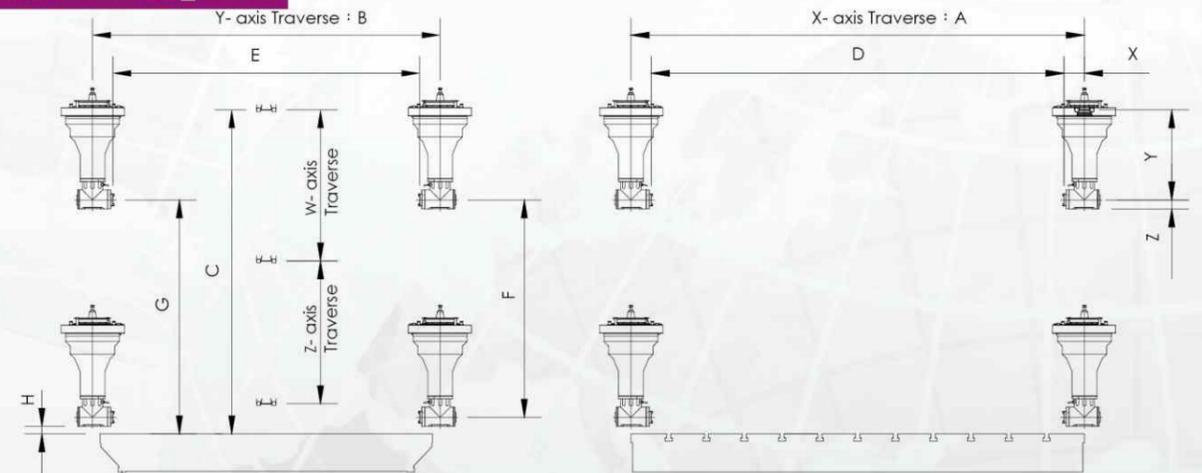
MODEL	Z-TRAVEL	W-TRAVEL	column to column	A	B	C	D	E	F	X
							C-(X+F)	(C-X)		
MW-433	1000	1200	2500	4000	3300	2400	1842	1892	50	508
MW-533	1000	1500		2700		2142	2192			
MW-633	1200	1500		2900		2342	2392			
MW-543	1000	1200	3500	5000	4300	2360	1802	1852	50	508
MW-643	1000	1500		2660		2102	2152			
MW-743	1200	1500		2860		2302	2352			
MW-843	1200	1800		3160		2602	2652			

Automatically extension head_HF-AE35L



MODEL	Z-TRAVEL	W-TRAVEL	column to column	A	B	C	D	E	F	X
							C-(X+F)	C-X		
MW-433	1000	1200	2500	4000	3300	2400	1992	2042	50	358
MW-533	1000	1500		2700		2292	2342			
MW-633	1200	1500		2900		2492	2542			
MW-543	1000	1200	3500	5000	4300	2360	1952	2002	50	358
MW-643	1000	1500		2660		2252	2302			
MW-743	1200	1500		2860		2452	2502			
MW-843	1200	1800		3160		2752	2802			

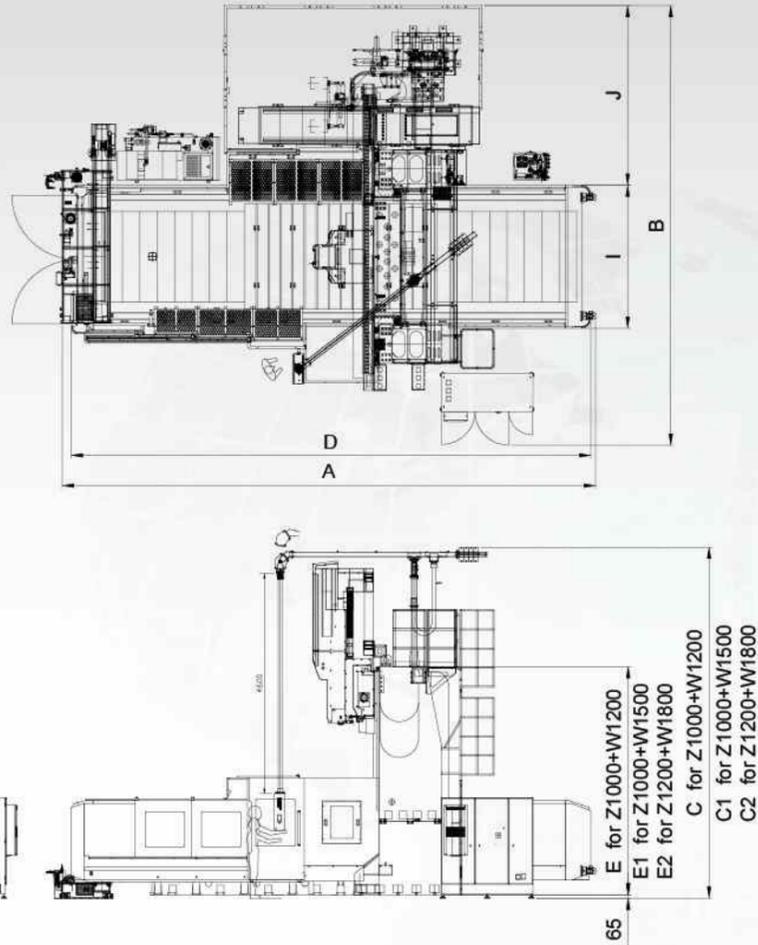
Automatic 90° head_HF-A90



MODEL	Z-TRAVEL	W-TRAVEL	column to column	A	B	C	D	E	F	G	H	X/Y/Z
							A-(X*2)	(B-X*2)				
MW-433	1000	1200	2500	4000	3300	2400	3730	3030	1690	1800	50	X : 135 Y : 600 Z : 60
MW-533	1000	1500		2700		4730	2100					
MW-633	1200	1500		2900		5730	2300					
MW-543	1000	1200	3500	5000	4300	2360	4730	4030	1650	1760	50	X : 135 Y : 600 Z : 60
MW-643	1000	1500		2660		5730	2060					
MW-743	1200	1500		2860		6730	2260					
MW-843	1200	1800		3160		7730	2560					

Machine Dimension

MW Mechanical Specifications Table



Model	MW-433	MW-533	MW-633	MW-543	MW-643	MW-743	MW-843
A	11076	13076	15076	13076	15076	17076	19076
B	9200	9200	9200	10200	10200	10200	10200
C	7046	7046	7046	7046	7046	7046	7046
C1	7346	7346	7346	7346	7346	7346	7346
C2	8046	8046	8046	8046	8046	8046	8046
D	10796	12796	14796	12796	14796	16796	18796
E	4480	4480	4480	4480	4480	4480	4480
E1	4780	4780	4780	4780	4780	4780	4780
E2	5280	5280	5280	5280	5280	5280	5280
F	3617	3617	3617	4117	4117	4117	4117
G	2797	2797	2797	3297	3297	3297	3297
H	6414	6414	6414	7414	7414	7414	7414
I	2994	2994	2994	3994	3994	3994	3994
J	3758	3758	3758	3758	3758	3758	3758

單位：mm

item	Model Unit	MW - 433	MW - 533	MW - 633
Table	Working surface	mm	4000 x 2200	5000 x 2200
	T-slot Width X pitch(number)	mm	28 x 250(15)	28 x 250(19)
	Max. load (Average)	kg	12000	15000
Travel	X-axis travel	mm	4000	5000
	Y-axis travel	mm	3300	3300
	Z-axis travel	mm	1000 opt.1200	1000 opt.1200
	W-axis travel	mm	1200 opt. 1500 / 1800	1200 opt. 1500 / 1800
	Distance from Spindle End to Table#50	mm	Z:1000_W:1200:200~2400 Z:1200_W:1500:200~2900	Z:1000_W:1200:200~2400 Z:1200_W:1500:200~2900
Spindle	Distance from spindle center to column	mm	750	750
	Width between column	mm	2500	2500
Spindle	Spindle nose taper		#50	#50
	Spindle speed(Built-in)	rpm	10000	10000
Feed	Spindle speed(Gear)	rpm	#50 6000 / 8000	#50 6000 / 8000
	Cutting feedrate (X / Y / Z)	m/min	10/10/10	8/10/10
	Rapid traverse rate (X / Y / Z)	m/min	20/16/16	14/16/16
ATC	Rapid traverse rate (W)	m/min	3	3
	Capacity	pcs	A : 32(40/62)	A : 32(40/62)
Motor	Max. tool weight	kg	A : 20	A : 20
	Max. tool size(dia.X length)	mm	A : Ø125 x 400L	A : Ø125 x 400L
	Tool shank		BT-50(CAT50/DIN/BBT50)	BT-50(CAT50/DIN/BBT50)
Positioning Accuracy	Pull stub bolt		P50T-1 (CAT-50/DIN 69872)	P50T-1 (CAT-50/DIN 69872)
	3-axis laser positioning accuracy(JIS B6330), without linear scale			
	Positioning accuracy	mm	±0.012	±0.012
other	Repeatability	mm	±0.003	±0.003
	3-axis laser positioning accuracy(JIS B6330), with linear scale			
	Positioning accuracy	mm	±0.010	±0.010
Machine dimension (L x W x H)	Repeatability	mm	±0.003	±0.003
	3-axis laser positioning accuracy(VDI13441)repeat 5 time			
	Positioning accuracy	mm	0.018	0.026
Machine weight	Repeatability	mm	0.015	0.021
	Required air pressure	kg/cm²	6.5	6.5
Machine dimension (L x W x H)	Electric power requirement	kVA	45 ~ 75	45 ~ 75
	Machine weight	kg	50000	54000
Machine dimension (L x W x H)	Floor space	mm	13000 x 9750	15000 x 9750
	Machine dimension (L x W x H)	mm	Z1000/W1200:11076 x 9200 x 7046 Z1000/W1500:11076 x 9200 x 7346	Z1000/W1200:13076 x 9200 x 7046 Z1000/W1500:13076 x 9200 x 7346
Machine dimension (L x W x H)	Machine dimension (L x W x H)	mm	Z1000/W1200:15076 x 9200 x 7046 Z1000/W1500:15076 x 9200 x 7346	Z1000/W1200:15076 x 9200 x 7046 Z1000/W1500:15076 x 9200 x 7346

VDI 3441 accuracy available upon order request.

※ According to standard machine for high precision mold machining industry, Z axis rapid traverse is 12000(mm/min)※

MW Mechanical Specifications Table

MCW Mechanical Specifications Table

item	Model Unit	MW - 543	MW - 643	MW - 743	MW - 843
Table	Working surface	mm 5000 x 3000	6000 x 3000	7000 x 3000	8000 x 3000
	T-slot Width X pitch(number)	mm 28 x 250(19)	28 x 250(23)	28 x 250(27)	28 x 250(31)
	Max. load (Average)	kg 21000	24000	27000	30000
Travel	X-axis travel	mm 5000	6000	7000	8000
	Y-axis travel	mm 4300	4300	4300	4300
	Z-axis travel	mm 1000 opt.1200	1000 opt.1200	1000 opt.1200	1000 opt.1200
	W-axis travel	mm 1200 opt. 1500 / 1800	1200 opt. 1500 / 1800	1200 opt. 1500 / 1800	1200 opt. 1500 / 1800
	Distance from Spindle End to Table#50	mm Z:1000_W:1200:160~2360 Z:1200_W:1500:160~2860	Z:1000_W:1200:160~2360 Z:1200_W:1500:160~2860	Z:1000_W:1200:160~2360 Z:1200_W:1500:160~2860	Z:1000_W:1200:160~2360 Z:1200_W:1500:160~2860
Spindle	Distance from spindle center to column	mm 750	750	750	750
	Distance between two columns	mm 3500	3500	3500	3500
	Spindle nose taper	#50	#50	#50	#50
Spindle	Spindle speed(Built-in)	rpm 10000	10000	10000	10000
	Spindle speed(Gear)	rpm #50 6000 / 8000	#50 6000 / 8000	#50 6000 / 8000	#50 6000 / 8000
Feed	Cutting feedrate (X / Y / Z)	m/min 8 / 8 / 10	8 / 8 / 10	8 / 8 / 10	6 / 8 / 10
	Rapid traverse rate (X / Y / Z)	m/min 14 / 14 / 16	12 / 14 / 16	10 / 14 / 16	8 / 14 / 16
	Rapid traverse rate (W)	m/min 3	3	3	3
ATC	Capacity	pcs A : 32(40/62)	A : 32(40/62)	A : 32(40/62)	A : 32(40/62)
	Max. tool weight	kg A : 20	A : 20	A : 20	A : 20
	Max. tool size(dia.X length)	mm A : Ø125 x 400L	A : Ø125 x 400L	A : Ø125 x 400L	A : Ø125 x 400L
	Tool shank	BT-50(CAT50/DIN/BBT50)	BT-50(CAT50/DIN/BBT50)	BT-50(CAT50/DIN/BBT50)	BT-50(CAT50/DIN/BBT50)
	Pull stub bolt	P50T-1 (CAT-50/DIN 69872)	P50T-1 (CAT-50/DIN 69872)	P50T-1 (CAT-50/DIN 69872)	P50T-1 (CAT-50/DIN 69872)
Motor	Spindle drive motor (cont./30 min)	kw 18.5 / 22 opt.30 / 35	18.5 / 22 opt.30 / 35	18.5 / 22 opt.30 / 35	18.5 / 22 opt.30 / 35
Positioning Accuracy	3-axis laser positioning accuracy(JIS B6330), without linear scale				
	Positioning accuracy	mm ±0.012	±0.012	±0.012	±0.012
	Repeatability	mm ±0.003	±0.003	±0.003	±0.003
	3-axis laser positioning accuracy(JIS B6330), with linear scale				
	Positioning accuracy	mm ±0.010	±0.010	±0.010	±0.010
	Repeatability	mm ±0.003	±0.003	±0.003	±0.003
	3-axis laser positioning accuracy(VDI13441)repeat 5 time				
	Positioning accuracy	mm 0.026	0.028	0.028	0.03
	Repeatability	mm 0.021	0.024	0.024	0.026
other	Required air pressure	kg/cm ² 6.5	6.5	6.5	6.5
	Electric power requirement	kVA 45 ~ 75	45 ~ 75	45 ~ 75	45 ~ 75
	Machine weight	kg 69000	74000	79000	84000
	Floor space	mm 15000 x 10750	17000 x 10750	19000 x 10750	21000 x 10750
	Machine dimension (L x W x H)	mm Z1000/W1200: 13076 x 10200 x 7046 Z1000/W1500: 13076 x 10200 x 7346	Z1000/W1200: 15076 x 10200 x 7046 Z1000/W1500: 15076 x 10200 x 7346	Z1000/W1200: 17076 x 10200 x 7046 Z1000/W1500: 17076 x 10200 x 7346	Z1000/W1200: 19076 x 10200 x 7046 Z1000/W1500: 19076 x 10200 x 7346

item	Model Unit	MCW - X550	MCW - X650
Table	Working surface	mm 8000~20000(2M) x 2200	8000~20000(2M) x 5000
	T-slot Width X pitch(number)	mm 28 x 250	28 x 250
	Max. load (Average)	(kg./m ²) 3000	3000
Travel	X-axis travel	mm 8000~20000(2M)	8000~20000(2M)
	Y-axis travel	mm 5500	6500
	Z-axis travel	mm 1000 opt.1200/1400	1000 opt.1200/1400
	W-axis travel	mm 1800 opt. 2100	1200 opt. 1500 / 1800
	Distance from Spindle End to Table#50	mm Z:1000_W:1800:450~3250 Z:1200_W:2100:450~3750	Z:1000_W:1800:450~3250 Z:1200_W:2100:450~3750
Spindle	Distance from spindle center to column	mm 860	860
	Width between column	mm 4500	5500
	Spindle nose taper	#50	#50
Spindle	Spindle speed(Built-in)	rpm 10000	10000
	Spindle speed(Gear)	rpm #50 6000 / 8000	#50 6000 / 8000
Feed	Cutting feedrate (X / Y / Z)	m/min 5/5/5	5/5/5
	Rapid traverse rate (X / Y / Z)	m/min 8/10/12	8/8/12
	Rapid traverse rate (W)	m/min 3	3
ATC	Capacity	pcs A : 40(62)	A : 40(62)
	Max. tool weight	kg A : 20	A : 20
	Max. tool size(dia.X length)	mm A : Ø125 x 400L	A : Ø125 x 400L
	Tool shank	BT-50(CAT50/DIN/BBT50)	BT-50(CAT50/DIN/BBT50)
	Pull stub bolt	P50T-1 (CAT-50/DIN 69872)	P50T-1 (CAT-50/DIN 69872)
Motor	Spindle drive motor (cont./30 min)	kw 18.5 / 22 opt.30 / 35	18.5 / 22 opt.30 / 35